

# INTEGRATED VARIABLE OPTICAL ATTENUATOR AND RELATED COMPONENTS

## Abstract of the Disclosure

5           A polarization element and a polarization-sensitive optical isolator are integrated  
to form an integrated VOA. A preferred embodiment uses a liquid crystal cell as the  
polarization element to which is attached an optical isolator core of a first polarizer,  
Faraday rotator, and second polarizer. Voltage on the liquid crystal cell electrodes  
controls the amount of polarized light from the liquid crystal cell passing through the first  
10   polarizer and light in the opposite direction is blocked. The integrated VOA can be  
mounted within a laser device package so that the power of the source laser diode on the  
output fiber can be controlled and yet the laser diode is protected from light undesirably  
entering laser device package through the output fiber.